

SHUYKIN, N.I.

Transformation of ethers of phenol under conditions of catalytic hydrogenation. N. I. Shuikin, L. A. Erivanskaya, and V. V. Kantsova (State Univ., Moscow). *Zhur. Obshchei Khim.* 26, 2562-7 (1956). Transformation of MeOPh over Ni-alumina catalyst (cf. Shuikin, *et al.*, *C.A.* 47, 0234c; Zelinskii and Komarevskii, *C.A.* 18, 2885) was studied at 105°, 185°, 215°, and 240° at atm. pressure and under 50 or 135 atm. H₂. At atm. pressure MeOPh undergoes hydrogenolysis at Ph-O and at Me-O links, as well as isomerization to *o*-cresol. Hydrogenation under 50 atm. H₂ and 100° yields hexahydroanisole, 82.5%, *b_m* 132.2-2.4°, *d₂₀* 0.8700, *n_D²⁰* 1.4348. At 215-40° the main reaction products are CH₄, some CO, PhOH, *o*-cresol, C₆H₆, cyclohexane, and olefins. At 215° hexahydroanisole cleaves completely to cyclohexane, C₆H₆, and H₂O, with formation of some CO, olefins, CO, H₂, and CH₄. At atm. pressure the products are MeOH, PhOH, cyclohexane, C₆H₆, and cyclohexene. G. M. Kosolapoff

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SHUYKIN, N.I.; BEL'SKIY, I.P.

Hydration and hydrogenolysis of α -ethyl- and α -propenylfuran
on skeletal nickel catalyst. Zhur. ob. khim. 26 no.10:2716-2720
0 '56. (MIRA 11:3)

1. Institut organicheskoy khimii Akademii nauk SSSR.
(Catalysts, Nickel) (Hydration) (Furan)

SHUYKIN, N.I.

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Hydrogenation and hydrogenolysis of α -ethyl- and α -propenylfuran over a Raney nickel catalyst. N. I. Shuykin and I. F. Derzhin (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow), *Dokl. Akad. Nauk SSSR*, 26, 2710-20 (1958); cf. C.A. 50, 3380g. The different stability of C-O and C-C bonds in substituted furans in respect to attack by H is caused by the screening effect of the side chains on adjacent bonds. 2-Acetylfuran hydrazone in very dry state was decompd. in the presence of 30% Ni on Al_2O_3 in the presence of very dry KOH, yielding 75-80% 2-ethylfuran, bp 01-1.5°, d_4^{20} 0.9018, n_D^{20} 1.4403. Furfuraldehyde and $EtMgBr$ gave the corresponding secondary alc. which dehydrated over Al_2O_3 at 400° to 2-propenylfuran, bp 132-3°, n_D^{20} 1.5098, d_4^{20} 0.9157. Hydrogenation of 2-ethylfuran over Raney Ni was run in a flow system with excess H at 175° and 225°. 2-propenylfuran was treated similarly at 135° and 175°. At 175° 2-ethylfuran gave 80% 2-ethyltetrahydrofuran; at 225° the yield dropped to 40% with increase of hydrogenolysis of the ring. 2-Propenylfuran was hydrogenolyzed by 85-90%, and only at 135° did it yield nearly 100% 2-propenyltetrahydrofuran. The products of hydrogenolysis of 2-ethylfuran at 175° were 23% 3-pentanol, 8% 3-hexanone, 67% 3-hexanol, and 2% 1-hexanol; at 225° there were obtained 27% 3-pentanone, 70% 3-hexanone, and 3% 1-hexanol. 2-Propenylfuran at 175° gave 22% 3-hexanone, 18% 3-hexanol, 31% 4-heptanone, and 29% 4-heptanol. G. M. Kosolapoff

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Opening of tetrahydrofuran ring by action of some halogen compounds N. I. Shulkin and I. R. Bel'skil (S. D. Zimin Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). Doklady Akad. Nauk S.S.S.R. 111, 1048-9 (1956); cf. C.A. 51, 5745h. — Only TiCl_4 , SbCl_5 , and PBr_5 could open the tetrahydrofuran ring forming the 1,4-dihalopentanes from 2-methyltetrahydrofuran; the 1st 2 reagents gave a vigorous reaction, while PBr_5 was relatively mild; SnCl_4 , POCl_3 , and SO_2Cl_2 gave almost no reaction after 5 hrs. even with heating. The by-products in the ring opening were solids, shown to be TiO_2 , Sb_2O_3 , and P_2O_5 , resp. The reaction with TiCl_4 or SbCl_5 was run under cooling with Dry Ice- Me_2CO , while with PBr_5 it is gradually added to the starting material while heated on a steam bath. The reaction products, after heating 2 hrs., were extd. with Et_2O , washed with Na_2CO_3 , and distd. Thus were prepd.: 70-8% (with TiCl_4) or 50-5% (with SbCl_5) $\text{MeCHCl}(\text{CH}_2)_2\text{CH}_2\text{Cl}$, b_p 57-8°, d₄ 1.0770, n_D 1.4480; 90% $\text{MeCHBr}(\text{CH}_2)_2\text{CH}_2\text{Br}$, b_p 70-80°, 1.6868, 1.5087 (cf. C.A. 51, 5745h).
G. M. Kosolapoff

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SHUKIN, N.I.

~~First International Congress on Catalysis. Vest.~~ AN SSSR 27 no.3:95-100
Mr '57. (MLRA 10:5)

1.Chlen-Korrespondent AN SSSR.
(Philadelphia--Catalysis--Congresses)

SHUYKIN, N.I.

Transformations of ethylcyclohexane in contact with palladium catalyst in a flow system under elevated temperature and pressure of hydrogen. N. I. Shuykin, Kh. M. Minakova, V. L. Vinogradov, and Ya. P. Egorov (N. D. Zelinski Inst. Org. Chem., Moscow). *Izv. Akad. Nauk S.S.S.R., Otd. Khim. Nauk* 1957, 698-603. — Passage of ethylcyclohexane over Pd-Al₂O₃ (0.5%) at 460° and 35-66 atm. H₂ resulted in dehydrogenation, hydrogenolysis of the side chain, isomerization by ring contraction and subsequent ring opening of the 6-membered ring. Increase of the H₂ pressure raised the conversion from 61.4 to 84.8%. Pretreatment of the catalyst with HF reduces its dehydrogenating and raises the isomerizing activity. The following products were found: o-, m-, and p-xylenes, MePh, EtPh, C₆H₁₀, C₅H₁₀, ethylcyclopentane, methylcyclopentane, Pr-C₄H₉, cyclopentane, CH₄, trans-1,1-dimethylcyclopentane, cis-trans-cis-, cis-cis-trans-, and cis-cis-cis-forms of 1,2,4-trimethylcyclopentane and 1-methyl-1-ethylcyclopentane. G. M. Kozlovskii.

454j-7

dm MT 01/28

SHUYKIN, N. I.

Distr: 4E4j/4E3d

Catalytic alkylation of benzene with alkenes in vapor phase. I. Alkylation of benzene with propylene. N. I. Shulkin and N. A. Pozdnyak (N. D. Zelinskii Inst. Org. Chem., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1957, 697-701; cf. *C.A.* 49, 13922f. — $ZnCl_2$ on Al_2O_3 is an effective catalyst for alkylation of C_6H_6 with C_3H_6 . The best yield was obtained with 312 g. C_6H_6 and 15 l. C_3H_6 at 200°. The products contained mostly aromatic hydrocarbons from which iso-PrPh was isolated. Raman spectral analysis showed that higher boiling fractions contained o-, m-, and p-iso-Pr₂C₆H₄. $ZnCl_2$ on SiO_2 is less effective.

G. M. Kosolapoff

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SHUYKIN, N. I.

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Action of ammonia on cycloheptanone in the presence of
nickel catalyst. M. A. Popov, N. I. Shuykin, and I. F.
Bel'skii (N. D. Zennskii Inst. Org. Chem., Moscow).
Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk 1957,
858-62; cf. C.A. 45, 9405c. — Passage of cycloheptanone and
NH₃ in 2-3 fold excess over a simultaneous stream of H over
a Ni catalyst (reduced from nitrate with H at 350°) on
Al₂O₃ at 190-290° gave C₇H₁₅NH₂, C₇H₁₃CH₂NH₂, b. 161-2°,
d₄ 0.8701, n_D²⁰ 1.4643 (Bz deriv., m. 108-9°), bis(1-methyl-
cyclohexyl)amine, b. 288° (HCl salt and chloroplatinate iso-
lated), suberone, and cycloheptanol. G. M. Kosolapoff.

Distr: 4E4J/4E2c (PM)

11/6
2 MAY
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Shuykin, N.I.

Dehydrogenation of pentane in the presence of aluminopotassium catalyst. N. I. Shulkin, B. A. Timofeeva, and V. M. Klemenova (N. D. Zelinskii Inst. Org. Chem., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1957, 875-7. — Passage of C_5H_{12} at 527° over a catalyst contg. Al_2O_3 80.7, Cr_2O_3 5.6, and K_2O 3.7 mole % at a space velocity 0.5 gave a product contg. 28% 2-pentene and 3% 1-pentene, 3% isopentane, 12% coke, 1% butadiene, and 1% 1,4-pentadiene. G. M. Kosolapoff.

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1-4E8d
1-4E4j

MT 7/2

Shoykin, N.I.

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21 6
Selective demethylation of alkanes on Raney-type nickel-
aluminum catalyst. N. I. Shoykin and M. I. Cherkashin
(N. D. Zelinski Inst. Org. Chem., Moscow). Izv.
Akad. Nauk S.S.R., Otdel. Khim. Nauk 1957, 878-9.
Hydrogenation of C_6H_{14} and C_7H_{16} over Raney-type Ni-Al
catalyst at 200° gave, resp., C_6H_{14} and C_7H_{16} and C_8H_{18} ,
as well as H and CH_4 . C_6H_{14} and C_7H_{16} were found in appre-
ciable ams. G. M. Kosolapoff

1-4E2C
1-4E3C

mt 13

SMUYKIN, N.I.

Composition and antidetonation properties of Surakhany gasoline. N. I. Smukin, S. S. Novikov, T. I. Narvshkina, and B. A. Englin (N. D. Zelinski Inst. Org. Chem., Moscow). *Izv. Akad. Nauk S.S.S.R. Otd. Khim. Nauk* 1957, 1086-90. The compn. of Surakhany gasoline was detd. by fractionation and chem. testing. The gasoline contains aromatic hydrocarbons 2.3, paraffins 0.9, cyclohexane derivs. (23% methylcyclohexane) 45.3, and cyclopentane derivs. 17.8%. The effectiveness as motor fuel decreases in the following sequence of gasoline components: pentamethylenes, hexamethylenes, paraffins. G. M. K.

Distr: 4E3d

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1-H/J
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SHUYKIN, N.I.

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Conversion of *n*-nonane in a flow system in the presence of
platinized aluminosilicate and hydrogen at elevated tem-
perature and pressure. Kh. M. Migachy, N. I. Shuykin,
L. M. Peofanova, and Yu. P. Egorov (N. D. Zelinskii Inst.
Org. Chem., Moscow). *Izvest. Akad. Nauk S.S.S.R.,*
Oldel. Khim. Nauk 1957, 1218-22; cf. *C.A.* 50, 6327b.—
A Pt aluminosilicate catalyst contg. 1% dispersed Pt was
tested in a flow system for its action on C_9H_{20} at 400° and
360° in the presence of H_2 at 20 atm. pressure. At 400°,
100% conversion is obtained with isomerization, hydro-
cracking, and dehydrocyclization predominating; when
the temp. is lowered to 360° hydrocracking is reduced and
the yield of isomeric alkanes amts. to about 63%. At
400° and a H_2 pressure of 20 atm. the conversion over an
aluminosilicate catalyst is only 14%, which indicates that
promotion of the catalyst by Pt is useful for the reforming of
gasoline. The following reaction products were isolated or
detected: Me_3CHEt , $n-C_8H_{18}$, Me_2CEt , Me_2CHPr , $Me-$
 CH_2Et , $n-C_7H_{16}$, methylcyclopentane, $n-C_7H_{16}$, CH_3-
 $(CH_2CHMe)_2$, $MePh$, *o*-, *m*-, and *p*-xylene, mesitylene,
m- and *o*- $MeEtC_6H_4$, 1,2,4- $Me_3C_6H_3$, mono- and disub-
stituted alkanes C_8 , CH_4 , C_2H_6 , and isomeric C_8H_{18} .
G. M. Kosolapoff

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4E4;
4E326

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SHUYKIN, N. I.

✓ Metal oxide catalysts for gasoline reforming. I. Re-
forming the gasoline fraction of Il'eko-Khadyzhinskii crude
oil over a platinum-silica catalyst. Kh. M. Minachev,
N. I. Shulkin, M. A. Rvashentseva, and N. P. Kononov
(N. D. Zelinskii Inst. Org. Chem., Moscow). *Izvest.
Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1957, 1223-8;
cf. C.A. 49, 7230s. — Max. yield of aromatic hydrocarbons
by dehydrogenation of naphthenes was obtained from the
gasoline fraction, b. 98-114°, over Pt-SiO₂ at 480°, 20 atm.
pressure, by using 7.2 moles H/mole of hydrocarbon. ||
The catalyst which contains 0.5% Pt promotes mainly
dehydrogenation and causes only a slight amt. of isomeriza-
tion. Gas formation amts. to ≤2%. G.M.K.

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4E4
4E2
4E3

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✓ Specific peculiarities of Raney type nickel-aluminum catalyst in hydrogenolysis of the pentamethylene cycle. N. I. Shukla and M. I. Cherkashin (N. D. Zelinskii Inst. Org. Chem., Moscow). *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1957, 1250-8. Hydrogenolysis over Raney type catalyst was examined with specimens of 1-butyl-1-cyclopentene (I), 1-isoamylcyclopentene (II), and isoamylcyclopentane (III). The reactions were run at 200° at atm. pressure. I gave 4.2% 2-methylhexane, 12.1% 2-methylheptane, and 16.6% 4-methyloctane with 22.1% butylcyclopentane. II gave 9.7% 2,5-dimethylheptane, 20.4% 2,5-dimethyloctane, and 30.6% isoamylcyclopentane. III undergoes similar changes under these conditions. The results are explainable by appropriate disposition of the cyclopentane ring on the catalyst surface. G. M. K.

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Distr: 4E4j/4E2c(j)/4E3d

SHUYKIN, N.I.

First International Congress on Catalysis. Khim. i tekhn. topl. 1
masel no.2:63-67 F '57. (MIRA 10:4)
(Philadelphia--Catalysis)

SHUYKIN, N.I.; BERDNIKOVA, N.G.; KASHKOVSKAYA, L.K.

Transformations of toluene and ethylbenzene in the presence of nickel-alumina catalysts under the pressure of hydrogen in a flow system. Izv.AN SSSR.Otd.khim.nauk no.3:353-357 Mr '57.
(MLRA 10:5)

1. Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk SSSR.

(Benzene) (Toluene)

SHUYKIN, N.I.; BERDNIKOVA, N.G.

Transformations of n-butylbenzene in the presence of a nickel-alumina catalyst under conditions of elevated temperature and hydrogen pressure. Izv.AN SSSR Otd.khim.nauk no.4:485-489 Ap '57.
(MIRA 10:11)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Catalysts) (Benzene)

SHUYKIN, N.I.
ROMADAN, I.A.; SHUYKIN, N.I.; YEGOROV, Yu.P.

Determination on purity of α - and β -n butylnaphthalenes by
the method of ultraviolet spectroscopy. Izv. AN SSSR. Otd. khim.
(MIRA 10:8)
nauk no.5:648-649 My '57.

1. Institut organicheskoy khimii im. N.D. Zelinskogo Akademii nauk
SSSR.

(Naphthalene--Spectra)

SHUYKIN, N.I.; NARYSHKINA, T.I.

All-Union conference on the chemical processing of petroleum hydrocarbons into semifinished products for the synthesis of fibers and plastics. Izv. AN SSSR Otd. khim. nauk no.10:1272-1275
0 '57. (MIRA 11:3)

(Baku--Petroleum products)
(Plastics)
(Textile fibers, Syntactic)

SHUYKIN, N.I., professor.

The First International Congress on Catalysis in Philadelphia.
Vest.Mosk.un. 12 no.1:198-202 '57. (MLBA 10:8)

1.Chlen-korrespondent Akademii nauk SSSR.
(Philadelphia--Catalysis--Congresses)

Shuykin, N.I.

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The contact catalytic conversion of phenols. Hydrogenation of *o*-, *p*-, and *m*-cresols on a nickel-alumina catalyst. N. I. Shuykin, E. A. Viktorova, I. E. Pokrovsk, A. A. Ivanova. *Vestnik Moskov. Univ.* 12, Ser. Mat. Mekh., *Fiz.-Khim.* No. 2, 157-61 (1967).—Each cresol (I) was passed over the catalyst (4-20% Ni) in a stream of H₂ at 125-200°, yields are shown in tables. Products in all cases were toluene, methylcyclohexane (II), and the respective methylcyclohexanol, and, with *o*- and *m*-isomers of I, 1-10% of ketones also. The max. yield of 3-methylcyclohexanol (80%) was from *m*-cresol at 125° with 10% Ni. *o*- and *p*-cresol here gave only *trans*-2- and *trans*-4-methylcyclohexanol, resp. The max. yield of II (71%) was from *p*-cresol at 175° with 20% Ni. The max. yields of acidic compds. (22-44%) were at 200°. The max. toluene yields (14-30%) were with 10% Ni at 175-200°. M.A.

56-278-11, N.I.
Distr: 4Elj

Catalytic transformations of anisole and isomeric methyl-anisoles. N. I. Shustkin, L. A. Eriyanskaya, and R. B. Kuznetsova. *Vestnik Morsk. Univ. 12, Ser. Mat., Mekh., Astron., Fiz., Khim. No. 3, 135-9(1957).*—When gaseous anisole, *m*-methylanisole, and *p*-methylanisole (0.9 l./hr.) were heated over Al_2O_3 at atm. pressure, high yields of the corresponding phenols and some polymethylated phenols were obtained. *O*-Methylanisole is more stable and yields only 35% products. V. S. Mikhailov

Chain Petroleum Chem.

Shulkin, N. I.

Distr: 4Eh3/4E2c(j)

Synthesis of 1,2,4-xyleneol and 2,4,6-trimethylphenol.
N. I. Shulkin, E. A. Viktorova, L. A. Erivanskaya, and V. V.
Kh. Vestnik Moskov. Univ. 12, Ser. Mat., Mekh., Astron.,
Fiz., Khim. No. 3, 141-3 (1957). p-Cresol treated with
aq. CH_3O , Et_3NH , and MeOH at $60-70^\circ$ 3 hrs. gave 2-(N,N-
diethylaminomethyl)methylphenol which can be hydro-
genated over Raney Ni to yield 2,4-xyleneol (I). Through
the same sequence of reaction 1 yields 2,4,6-trimethyl-
phenol. V. S. Mikhailov

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SHUYKIN, N.I.; DASHZANTS Batyn

Contact-catalytic isomerization of meta-xylol on aluminum oxide
and silica. Part 1. Vest.Mosk.un.Ser.mat., mekh., astron., fiz.,
khim. 12 no.3:247-251 '57. (MIRA 11:3)

1.Kafedra khimii nefiti Moskovskogo gosudarstvennogo universiteta.
(Xylene) (Isomerization) (Aluminum oxide)

Shaykin, N. I.
Distr: *hEh3/NE3d*

27
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✓ Isomerization of *m*-xylene over aluminum silicate in presence of activators. II. N. I. Shaykin and D. Batyn. *Vestnik Moskov. Univ. 12, Ser. Mol., Mekh., Astron., Fiz. Khim. No. 3, 253-7 (1957)*; cf. preceding abstr. — *m*-Xylene isomerizes to *p*- and *o*-isomers when in contact with aluminum silicate catalyst. In HCl, the yield of *p*-xylene at 450° is 19.8%; in the presence of H₂O vapors the yield is 19.4%. V. B. Mikhailov

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Chair Chem. Petroleum

SHUYKIN, N.I.; VIKTOROVA, Ye.A.; LITVINOV, V.P.

Contact catalytic conversions of phenols. Part 3: Alkylation of
m-cresol by amylenes. Vest. Mosk. un. Ser. mat., mekh., astron.,
fiz. khim. 12 no.5:121-124 '57. (MIRA 11:9)

1. Kafedra khimii nefti Moskovskogo gosudarstvennogo universiteta.
(Alkylation) (Cresol)

SHUYKIN, N.I.; ERIVANSKAYA, L.A.; AN, V.V.

Contact catalytic conversions of phenetole, n-propyl and isopropyl phenol ethers in the presence of aluminum oxide. Vest. Mosk. un. Ser. mat., mekh., astron., fiz. khim., 12 no.5:125-132 '57.
(MIRA 11:9)

1. Kafedra khimii nefi Moskovskogo gosudarstvennogo universiteta.
(Ethers) (Aluminum oxides)

AUTHORS:

SHUYKIN, N.I.
Minachev, Kh.M., Shuykin, N.I., Kononov, N.F.,
Garanin, I.L., Ryashentseva, M.A.

62-12-7/20

TITLE:

The Investigation of Oxide-Metallic Catalysts of Gasoline Reforming (Issledovaniye oksino-metallicheskikh katalizatorov reforminga benzinov). Information 2. The Reforming of Narrow Gasoline Fractions of the Ilsk Mineral Oil and of the Mineral Oil of the Second Baku by Means of Platinum Catalysts (Soobshcheniye 2. Reformirovaniye uzkih benzinovykh fraktsiy il'skikh neftey i neftey Vtorogo Baku na platinovykh katalizatorakh).

PERIODICAL:

Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1957, Nr 12, pp. 1472-1477 (USSR)

ABSTRACT:

Recently, the problem of producing active and stable gasolines (with a view of obtaining aromatic hydrocarbons) has been attaining special importance. In previous works (4,5) it was shown that the catalyst $0.5\% \text{ Pt} - \text{Al}_2\text{O}_3$ has a favorable dehydrating and (with respect to isomers) efficacious activity. In the present paper the authors investigated the activity and stability of the catalyst $0.5\% \text{ Pt} - \text{Al}_2\text{O}_3$ under the conditions of the reformation of the fraction (boiling point $95-115^\circ$) of the mineral oil of Ilsk. It was proved that, specially selected conditions prevailing, the catalyst

Card 1/2

62-12-7/20

The Investigation of Oxide-Metallic Catalysts of Gasoline Reforming. Information 2. The Reforming of Narrow Gasoline Fractions of the Ilsk Mineral Oil and of the Mineral Oil of the Second Baku by Means of Platinum Catalysts

retained its stability in the case of a sufficiently high activity (of up to 2000 hours). Furthermore, a comparative investigation was carried out concerning the properties of the two platinum catalysts at the conditions of the reformation of the fraction (85-138°) of the mineral oil of the second Baku (Vtoroy Baku). In this connection it was found that the catalyst 0.5% - Pt-Al₂O₃ is much more advantageous than the catalyst 0.5% Pt-SiO₂. The advantage it offers consists in the greater yield of aromatic hydrocarbons as well as in a lower degree of gas formation. It was shown that the catalyst 0.5% Pt-Al₂O₃ is very well suited for reforming gasoline fractions (for the purpose of obtaining aromatic hydrocarbons). Besides, its hydrocracking properties are rather insignificant. There are 2 tables, and 10 references, 7 of which are Slavic.

ASSOCIATION:

Institute for Organic Chemistry AN USSR imeni N.D.Zelinskiy
(Institut organicheskoy khimii im.N.D.Zelinskogo Akademii Nauk SSSR).

SUBMITTED:

June 29, 1956

AVAILABLE:

Library of Congress

Card 2/2

1. Gasolene-Oxide-Metallic-Catalyzers 2. Mineral oil-Gasolene
fractions-Platinum catalysts

79-2-27/58

AUTHORS: Shuykin, N. I. and Bel'skiy, I. F.

TITLE: Catalytic Hydrogenolysis of Furan Compounds (Kataliticheskiy gidrogenoliz v ryadu furanovykh soyedineniy)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, vol 27, No 2, pp. 402-406 (U.S.S.R.)

ABSTRACT: The authors investigated the conversions of alpha-isobutyl-, alpha-isobutenyl- and alpha-pentenylfurans by hydrogenation and hydrogenolysis of same over a skeletal Ni-catalyst at normal pressure. It was established that hydrogenation of these compounds at 175° leads to the formation of alkyl alcohols and ketones - products of the hydrogenolysis of the furan ring. The ring of the compounds named experiences a cleavage by 74, 81. and 75% respectively. It was observed that the basic trend of the hydrogenolysis is the disruption of the C - O bond and combined disruption of other bonds thus forming secondary alcohols and homologous ketones of the aliphatic series. The primary alcohols which could be formed as a result of hydrogenolysis of the C-O bond adjoining the substitute are either absent or are retained in small amounts in the reaction products. The

Card 1/2

79-2-27/58

Catalytic Hydrogenolysis of Furan Compounds

reason for that should be sought in the shielding effect of the side group on the neighboring C-O and C-C bonds. The hydrogenolysis reaction of furan homologues is recommended as a method for the obtainment of certain less accessible alkyl alcohols and ketones.

There are 19 references of which 9 are Slavic

ASSOCIATION: USSR Academy of Sciences, Institute of Organic Chemistry

PRESENTED BY:

SUBMITTED: March 24, 1956

AVAILABLE: Library of Congress

Card 2/2

PA - 2621

AUTHOR
TITLE

PERIODICAL

ABSTRACT

SHUYKIN N.I.

First International Congress on Catalysis
(Pyervyy myezhdunarodnyy Kongress po Katalizu -Russian)
Vestnik Akademii Nauk SSSR, 1957, Vol 27, Nr 3, pp 95-100, (U.S.S.R.)
Reviewed 6/1957

Received 5/1957
As a result of the joint endeavors made by the Catalysis Club in Philadelphia, Catalysis Club in Chicago, the university of Pennsylvania, the National Scientific Fund of the USA, and the International Society for pure and applied chemistry together with 35 chemical, mineral oil, and metallurgical firms, the first congress on catalysis was held at Philadelphia on the 10 September 1956. The program consisted of 4 symposia:
1. Chemistry and physics of hard catalizers. 2. Homogeneous catalysis and relative effects. 3. Chemistry of surface phenomena and their relation to catalysis. 4. Technology of catalysis. As the original program did not provide for lectures to be held by Soviet scientists, the organization committee decided that a special session be held for this purpose, which was attended by a numerous audience. The following lectures among others were delivered : N.I.Shuykin (Institute for inorganic chemistry of the Academy of Science of the USSR): "Catalysis of cyclichydrocarbons on the metals of the VII. group of periodic systems". K.V.Topchiyev (professor of physical chemistry, Moscow University): "The part played by surface bindings in the research of the catalytic dehydration of alcohols". F.F.Volkenstein (Institute for physical chemistry of the Academy of Science): " On the mechanism of the catalytic effect of semiconductors", etc. The lectures delivered by Soviet scientists gave rise to

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First International Congress on Catalysis

a lively discussion and the same was the case with other scientific works by Soviet authors not attending this congress, which were, however, read. The author gives abstracts of the most important lectures delivered, mainly of those by American scientists, which he describes as "most interesting".

In conclusion, the author stresses the importance of establishing contact between Soviet scientists and those of other countries, and much has been achieved by Soviet scientists in the interest of world science, a fact which was also confirmed by the president of this congress.

ASSOCIATION
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Card 2/2

Library of Congress

SHUMILIN, N.I.; TUMATOV, V.A.

Catalytic conversion of α -pentene. Zhur. obshch. khim. 27 no. 6:1448-1454
Je '57. (1957 10:2)

1. Moskovskiy gosudarstvennyy universitet.
(Moscow)

SHUYKIN, N. I.

AUTHORS: Shuykin, N. I., Corresponding Member of the
AN USSR; Naryshkina, T. I.;

30-9-36/48

TITLE: The Synthesis of Synthetic Fibers and Plastics From Petroleum
Hydrocarbon (Sintez volokon i plasticheskikh mass
iz neftyanykh uglevodorodov).

PERIODICAL: Vestnik AN SSSR, 1957, Vol. 27, Nr 9, pp. 114-117 (USSR)

ABSTRACT: From May 27 to June 2 a consultation on a Union scale took place in Baku which dealt with the hitherto obtained research-data concerning the working up and utilization of petroleum-hydrocarbon for the above-mentioned purposes. More than 400 representatives of industry and economy as well as numerous scientists participated in this consultation. The chief engineer of the Azerbaidzhan United Petroleum Fatories in his report analyzed the various possibilities of the utilization of the hydrocarbons of petroleum. Topchiyev and Krentsel' talked on the stereoregular polyolefins and devoted their attention to the important problems of the production of crystalline polypropylene. Several papers dealt with the new methods of the production of caprolactam according to the scheme cyclohexane → cyclohexanonoxim →

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The Synthesis of Synthetic Fibers and Plastics From
Petroleum Hydrocarbon

30-9-36/48

caprolactam. A Bashkirov among others reported on the new method of the production of aliphatic amines on the basis of hydrocarbon-oxide, nitrogen and ammonia. The research works in the domain of electro- and thermo-cracking of the hydrocarbon-composition $C_2 - O_4$ are continued.

AVAILABLE: Library of Congress.

Card 2/2

SHUYKIN, N. I.

Distr: 4E4j

7
✓Catalytic transformations of 1-pentene. N. I. Shukin and
V. A. Tulupov. (State Univ., Moscow). *Zhur. Obshchei*
Khim. 27, 1448-54 (1957). The transformation of 1-pentene
in the range of 300-600° were studied over andalusite, Zn
and Mg silicates, MnO, SiO₂ gel, and Pt-SiO₂. The prin-
cipal reaction in all cases is isomerization to 2-pentene, ac-
companied by some isomerization of the carbon skeleton
yielding small amts. of dienes and pentane isomers.
G. M. Kozolouff

PM

4

SHUYKIN, N.I.

✓ Kinetic investigation of the cyclopentadiene dimerization reaction. N. I. Shuykin and T. I. Narvshkina (N. D. Zelinskii Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Zhur. Fiz. Khim.* 31: 493-7(1957).—In the dimerization kinetics studies of cyclopentadiene at -10° to $+30^{\circ}$ in MeCN, ether, C_6H_6 , CCl_4 , $PhCl$, and C_2H_5Cl , and in the presence of various stabilizers [phenyl- β -naphthylamine, hydroquinone, pyrogallol, and $Ni(OAc)_2$]. The rate const. of the dimerization reaction depended on the nature of the solvents, with MeCN having the greatest stabilizing effect. The stabilizing agents mentioned were more effective in lowering the dimerization rate of cyclopentadiene than $CuCl$ or S.

W. M. Sternberg

PM

4
4E4j -1
4E2c(j) -1
2mag -1 } 3

AUTHOR SHUYKIN, N.I., Corresponding Member, and
 BEL'SKIY, I.F.,
 TITLE On the Interaction of Tetrahydrofuran with Silicon Tetrachloride.
 (O vzaimodeystvii tetragidrofirena s chetyrekhkloristam kemniyem-
 Russian)
 PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 366-367,
 (U.S.S.R.)
 Received 6/1957 Reviewed 7/1957
 ABSTRACT The cleavability of the tetrahydrofuran cycle by several haloid
 containing matters is known. 1,4-dihaloid-replaced aliphatic hy-
 drocarbons develop. The authors found out that the mentioned cy-
 cle is decomposed under the influence of chloric and bromal aluminum,
 titanium tetrachloride and antimony pentachloride. On this occa-
 sion 1,4-dihaloid alkanes develop. In the present paper the two
 substances mentioned in the title are investigated with regard to
 these facts. It turned out that without catalysts even in the case
 of heating for 5 hours a reaction did not occur. Under the ca-
 talytic influence of the anhydrous chloride of zinc, however, the
 reaction proceeds fast enough and leads to the fromation of 1,4-
 dichloro-butane and a silico-organic compound with presumably the
 following structure:

$$\begin{array}{l} \text{Cl}_2\text{Si} \quad \text{OCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl} \\ \quad \quad \text{OCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl} \end{array}$$

 Card 1/2 This compound is slightly hydro-
 lized by water under heat development and goes over into 4-chlo-

20-2-32/60

AUTHORS: Shuykin, N. I. , Corresponding Member of the AS USSR,
Naryshkina, T. I.

TITLE: Catalytic Dehydrogenation of Cyclopentane (Kataliticheskaya
degidrogenizatsiya tsiklopentena)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp.351-353
(USSR)

ABSTRACT: Only few scientific investigations have dealt with conversions
of cyclopentane under the above circumstances. On the other
hand, a number of papers have suggested that it is possible
to obtain cyclopentadiene directly by dehydrogenation of cyclo-
pentane. The respective yields, however, amounted only to
3 - 11 %. The authors of the paper under review set themselves
the task of finding conditions under which this conversion
takes place as completely as possible. It was discovered that
at 600°, in the presence of an aluochromium catalyzer, up
to 58 % cyclopentadiene can be obtained. As this dehydrogena-
tion takes place with an increase in volume

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20-2-32/60

Catalytic Dehydrogenation of Cyclopentane



and as consequently the decrease in pressure must shift the equilibrium from left to right, this reaction was carried out at reduced pressure (20 mm). Cyclopentane was obtained by dehydration of cyclopentanol over magnium sulphate free of water at 310 - 315°. The results are represented in Table Nr 1 of the present paper. It follows therefrom that when the temperature increases from 500 to 600° also the concentration of cyclopentadiene in the catalyzer increases. The highest yield, however, was obtained at 600°. It can be seen from the data contained in Table Nr 2 of the paper under review that the catalysate of the cyclopentane consists mainly of cyclopentadiene, furthermore of a small amount of the unchanged cyclopentadiene, and of a rest. The analysis of carbonaceous deposits at the catalyzer has shown that, as far as their composition is concerned, they are close to the polymer of cyclopentadiene. Thus the reaction of dehydrogenation of cyclopentane under reduced pressure and on active dehydrating contact makes it possible to considerably limit the subsidiary processes and to concentrate the reaction on cyclo-

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Catalytic Dehydrogenation of Cyclopentane

pentadiene with a high yield. In addition to the main reaction, we have minor coke formation and hydrocracking of cyclopentane, leading mainly to the production of gaseous products from C_2 and C_3 . There are 1 figure, 1 table, and 14 references, 8 of which are Soviet.

ASSOCIATION: Institute of Organic Chemistry imeni N. D. Zelinskiy,
AS USSR
(Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: January 14, 1957

AVAILABLE: Library of Congress

Card 3/3

AUTHOR

SHUYKIN, N.I., Corresponding Member of the Academy
and BEL'SKIY, I.F.

TITLE

The Catalytic Hydrogenolysis of Sylvan on varied Catalysts.

PERIODICAL

(Kataliticheskiy gidrogenoliz sil'vana na razlichnykh katalizatorakh.- Russian)
Doklady Akademii Nauk SSSR 1957, Vol 115, Nr 2, pp 330-332 (U.S.S.R.)

ABSTRACT

The hydrogenolysis reaction of furan homologs depends on three factors, namely on the operating conditions, the nature of the catalyst and on temperature. In the sylvan hydration in the liquid phase on copper chromite the furan cycle is split to almost the same extent on the ether bonds 1-2 and 1-5. As a result develop pentanol-1 and -2. In contrast to that the sylvan hydrogenolysis in the liquid phase on the Adams platinum catalyst occurs only in the direction of a splitting of the C--O bond 1-5. The same is true for the hydrogenolysis in the gas phase on nickel and copper catalysts, however there develops no alcohol, but a ketone (pentanone-2). In earlier works the authors studied the same reaction of furan homologs in the gas phase

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20-2-37/67

The Catalytic Hydrogenolysis of Sylvan on Varied Catalysts.

on a skeleton nickel-aluminium catalyst and proved that thereupon takes place a hydrogenolysis not only of the ether-, but also of the carbon-carbon bonds in the furan cycle. All furan homologs with an alkyl- or alkenyl substituent in an α -position are subject to hydrogenolysis in three directions. A scheme for this is given. At 175°C and below the furan cycle undergoes a hydrogenolysis only in directions I and II (of the scheme), above 235°C also in direction III. The present paper gives test results of the sylvan hydrogenolysis in the gas phase in the presence of various catalysts: platinum (15%) and palladium (10%) on charcoal, Adkins copper chromite, nickel (30 %) on aluminiumoxide and skeleton nickel-aluminium catalyst. The results of this study lead to the conclusion that the direction and depth of the hydrogenolysis of the furan cycle essentially depends on the nature of the catalyst. Platinum on charcoal possesses the selective ability to carry out the hydrogenolysis of the cycle in sylvan only on the ether bond 1 -- 5. The presence in the reaction products only of pentanone-2 and unchanged sylvan shows that at 275°C the hydrogenolysis reaction on the platinum catalyst occurs incomparably faster than the hydrogenolysis

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The Catalytic Hydrogenolysis of Sylvan on Varied Catalysts.

tion of the double bonds in the cycle. Pentanone-2 practically forms with a quantitative yield in relation to the sylvan that entered the reaction,. In contrast to that the palladium catalyst proves much more effective in the hydration of double bonds of the cycle and shows only insignificant activity in the hydrogenolysis of the ether bond. Just as on platinum, the furan cycle in the presence of a palladium catalyst is subject to hydrogenolysis only on the C--O bond 1--5, whereby pentanone-2 develops. Copper-chromium catalyst shows a rather weak activity in the hydration and hydrogenolysis at 275°C. In contrast to the hydrogenolysis on copperchromite in the liquid phase which leads to the formation of two alcohols, the reaction here in the gas phase takes place only in the direction of a splitting of the ether bond which does not border the side group. The mentioned skeleton catalyst and nickel on aluminumoxyde differ widely with regard to their ability to carry out the

CARD 3/4

SHUYKIN, N. I.

AUTHORS: Shuykin, N. I., Corresponding Member of the
AN SSSR and Bel'skiy, I. F.

20-4-26/51

TITLE: The Hydrogenolysis of Furane Homologues on a Platinum Catalyst
(Gidrogenoliz gomologov furana na platinovom katalizatore)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 4, pp. 621-624 (USSR)

ABSTRACT: After an exhaustive review of references the authors make the comprising statement that the hydrogenolysis of the furane cycle in a general case depends on the nature of the catalyser, furthermore on the character of the lateral substituent, on the temperature and on the phase (Liquid and vaporous) in which the reaction takes place. The authors investigated the reaction of the α -substituted furane homologues in the vapour phase on 15% platinum, deposited on activated birch coal. The length of the lateral chain of the furane homologues was chosen from C_1 up to C_5 in order to be able to evaluate the influence of the chain length of the alkyl lateral group on the character of the hydrogenolysis. It was found that the furane cycle under these conditions at 275° , independently of the chain length, splitted at the C4O-binding 1-5 which is not adjacent to the lateral group. Here aliphatic ketones are formed with yields of 90-95% of the theoretically possible yield. At this temperature (275°) no alkyl tetrahydro-furanes were found. However, at 230° from the hydrated α -n-propyl furane beside heptanon -4 also α -n-propyl-tetra-

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The Hydrogenolysis of Furane Homologues on a Platinum Catalyst. 20-4-26/51

hydro-furane was obtained in a quantity of 16% of the catalyst weight. Thus the lower temperature favors the reaction of the hydrogenization of the double bindings in the furane cycle, whereas an increased temperature is favorable for the hydrogenolysis of the ether binding 1-5. In the experimental part the usual data are given. Final conclusions: It was found that in the case of hydration of the α -alkyl furanes in the vapor phase on platinized coal a selective hydrogenolysis of the furane cycle on the C-O-binding 1-5 takes place, a fact by which aliphatic ketones with high yields are formed. There are 2 tables, and 8 references, 1 of which is Slavic.

ASSOCIATION: Institute for Organic Chemistry imeni N. D. Zelinskiy AN USSR
(Institut organicheskoy khimii im. N. D. Zelinskogo Akademii Nauk SSSR)

SUBMITTED: July 10, 1957

AVAILABLE: Library of Congress

Card 2/2

SHUYKIN, N. I.

20-5-24/48

AUTHORS: Shuykin, N. I., Corresponding Member AN USSR, Bel'skiy, I. F. and Tyan' Sin-Khua

TITLE: Hydrogenolysis of α - Methyl- α' -Ethylfuran on Platinized Charcoal (Gidrogenoliz α -metil- α' -etilfurana na platinirovannom ugle)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 5, pp. 808 - 810 (USSR)

ABSTRACT: For the purpose of comparison the authors investigated the hydrogenolysis of silvan at various catalysts. The furan ring in silvan can be splitted at a platinum-, palladium-, and copper-chromium catalyst in the vapor phase at 275° at an ether binding not adjoining to a lateral group. This leads to the formation of methylpropylketone. Only the platinum catalyst shows the power of splitting the furan ring selectively at the C--O- binding; without any secondary processes. In contrast to all these catalysts the skeleton-Mi-Al-catalyst has specific powers to carry out the hydrogenolysis of the furan ring in the direction of cracking of the ether binding 1 - 5 as well as 1 - 5 and 3 - 4. In the last case ketones are produced which contain in the molecule 1 or 2 carbon atoms less than the initial alkylfuran had. This is to be called the "conjugated" hydrogenolysis. In all cases the influence of the la-

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20-5-24/48

Hydrogenolysis of α -Methyl- α' -Ethylfuran on Platinized Charcoal

teral-alkyl-substituent effects an almost complete incapability of the C--O-binding 1 - 2 of hydrogenolysis. Therefore it was interesting to investigate the comparing capability of the C--O-binding of the hydrogenolysis which are influenced by 2 alkyl groups with different lengths of the carbon chain. If the reaction at the ether bindings 1 - 2 or 1 - 5 mentioned in the title is carried out, heptanon-3 and heptanon-2 are bound to be produced correspondingly. The first substance was obtained at 235° in the vapor phase with a yield of 54 %, the latter with 36 %. N-heptan (~7%) was present in a considerably smaller quantity. Its formation is effected by a simultaneous hydrogenolysis of the furan ring at the C--O-bindings 1 - 2 and 1 - 5. The relative content of the two first ketones in the products of the hydrogenolysis leads to the conclusion that the ethyl group exercises a much more stabilizing influence on the adjoining C--formation than the methyl group. The experimental part with the usual data follows. There are 3 references, 2 of which are Slavic.

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20-5-24/48

Hydrogenolysis of α -Methyl- α' -Ethylfuran on Platinized Charcoal

ASSOCIATION: Institute for Organic Chemistry imeni N. D. Zelinskiy, AN USSR
(Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk
SSSR)

SUBMITTED: June 13, 1957

AVAILABLE: Library of Congress

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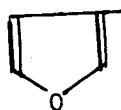
SHUYKIN, N I

AUTHORS: Shuykin, N. I., Corresponding Member of the AN USSR and Bel'skiy, I. F. 20-1-25/42

TITLE: Note on the Selective Reduction of Alkyl-Furyl-Carbinols to Alkylfuranes on a Palladium Catalyser (Selektivnoye vosstanovleniye alkilfurilkarbinolov v alkilfurany na palladiyevom katalizatore).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 1, pp. 95-97 (USSR)

ABSTRACT: The hydration reaction of compounds of the type



- CH-R , where R may denote a hydrogen atom, OH

a alkyl or an aryl radical, has been thoroughly investigated with respect to the multiplicity of compounds as well as to the number of the catalysers employed. According to the nature of the last and according to the structure of the compounds the hydration may take three directions:

1) The double compounds of the furane cycle are the only

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Note on the Selective Reduction of Alkyl-Furyl-Carbinols 20-1-25/42
to Alkylfuranes on a Palladium Catalyser

ones that are hydrated, in such a way as to produce alcohols of the tetrahydrofuran series. 2) The hydrolysis of the cycle takes place at one or at both C-O bindings, wherefrom "alkandioles" and alkanols are produced. 3) The lateral group may be reduced entirely, the hydroxyl being replaced by a hydrogen atom. Finally, all or some of the abovementioned reactions can take place at the same time under certain conditions. A comparison is given between the nickel- platinum- and copper catalysers employed for these purposes. As it is well known, palladium represents an excellent catalyser of the double bindings of the furane cycle in the liquid as well as in the vapour phase. The attempt of the authors to hydrate the furane ring of the compounds mentioned in the title at palladised coal lead to surprising results: Instead of a hydration of the double bindings in the furane cycle a hydrolysis of the C - OH bindings and the replacement of the hydroxyl group by a hydrogen atom took place. This lead to a conversion of the ethyl- and methyl-furyl carbinols to the corresponding

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Note on the Selective Reduction of Alkyl-Furyl-Carbinols
to Alkylfuranes on a Palladium Catalyser

20-1-25/42

α -propyl and α -ethyl furanes, yielding 70-80 % of the theoretically possible production. This ability to split forms a specific property of this type of compounds. It does not occur in pentanole 2 at much higher temperatures. It is a remarkable fact, that the hydroxyl group of the alkyl tetrahydrofurylcarbinols is not even capable of reduction. Therefore the C - O binding is weakened only in alkylfurylcarbinols to such an extent, that it is easily broken up by hydrogen on palla disated coal. The reason for this may be sought in the fact, that the C - O binding in the lateral chain is conjugated with the double binding of the furane cycle. Methods of production for the initial substances are given. The reaction of the reducing des-hydroxylisation of the alkylfurylcarbinols into alkylfurane constitutes a very interesting instance of the selective effect of the palladium catalyser. Apart from its theoretical interest it may be of great importance in a preparative respect, for it provides for an avoidance of the stage of the dehydration of the alkylfurylcarbinols in the synthesis of the alkylfuranes, which, in general, does not proceed smoothly. There are 8 references, 2 of which are Slavic.

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Note on the Selective Reduction of Alkyl-Furyl-Carbinols 20-1-25/42
to Alkylfuranes on a Palladium Catalyser

ASSOCIATION: Institute for Organic Chemistry imeni N. D. Zelinskiy
AN USSR (Institut organicheskoy khimii im. N. D. Zelinskogo
Akademii nauk SSSR)

SUBMITTED: July 10, 1957

AVAILABLE: Library of Congress

Card 4/4

62-2-7/28

Shuykin, N. I.

AUTHORS: Minachev, Kh. M., Shuykin, N. I.,
Feofanova, L. M., Yegorov, Yu. P.

TITLE: Transformations of n.Hendecane in the Presence of Some Metals
of the Eighth Group Under Hydrogen Pressure in a Flow-System
(Prevrasheniya n.undekana v prisutstvii nekotorykh metallov
vos'moy gruppy pod davleniyem vodoroda v protochnoy sisteme).

PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958, Nr 2,
pp. 174-180 (USSR).

ABSTRACT: The results of the contact-catalytic transformations of
n.heptane and n.decane in the presence of some metals of the
eight group were described in the reports already published.
These conversions took place under hydrogen pressure and at
raised temperatures. The authors continued their investigations
in this field and in the present paper deal with the investi-
gation of the behavior of n.hendecane on Pt-, Pd- and Ni-
catalysts. Papers on the investigation of the conversions of
high-molecular alkanes are almost completely absent in publi-
cations. This is mainly to be explained by the fact that in-
vestigations in this direction meet with great difficulties
due to the absence of chemical and physical methods for the

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Transformations of n-Hendecane in the Presence of Some Metals 62-2-7/28
of the Eighth Group Under Hydrogen Pressure in a Flow-System.

analysis of the hydrocarbon mixtures obtained by the conversions. In the present paper the authors report on the investigation of the catalytic properties of finely dispersed palladium, platinum and nickel, separated in small concentrations on aluminum oxide in the conversions of n.hendecane at 350-450°C under hydrogen pressure (20 at. excess pressure) in a flow-system. It was found that the degree of conversion of the initial hydrocarbon is to a considerable extent dependent on the type of catalyst. It was further shown that under the assumed conditions the fundamental direction of the conversions of n.hendecane are the reactions of isomerization, hydrocracking and partial dehydrocyclization. Finally the problem concerning the ways of formation of aromatic hydrocarbons from n.hendecane was examined. There are 4 tables, and 6 references, 5 of which are Slavic.

ASSOCIATION: Institute for Organic Chemistry imeni N.D. Zelinskiy AN USSR
(Institut organicheskoy khimii imeni N.D. Zelinskogo Akademii nauk SSSR).

SUBMITTED: August 28, 1956

AVAILABLE: Library of Congress

Card 2/2

1. Palladium-Catalytic properties
2. Platinum-Catalytic properties
3. Nickel-Catalytic properties
4. n-Hendecane-Transformations

AUTHORS: Shuykin, M. I., Tulupova, Ye. D., Polyakova, Z. P. 62-2-8/28

TITLE: Conversions of Metaxylene in the Presence of Metallic-Salt Halides in the Liquid Phase (Prevrashcheniya metaksilola v prisutstviy galoidnykh soley metallov v zhidkoy faze).

PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958, Nr 2, pp. 181-185 (USSR).

ABSTRACT:

The investigation of the conditions of the contact-catalytic conversions of m-xylene (for the purpose of obtaining a para-isomer) is gaining more and more importance. A number of works dealing with the investigation of the conversions of m-xylene in the presence of aluminum chloride are to be found in publications. In a careful study of these publications, however, no conclusions can be drawn with regard to the optimum conditions of the isomerization of m-xylene in the para-isomer (in the presence of aluminum chloride). The reason lies in the fact that in relevant papers m-xylene does not occur as final product of reaction. There are no data on the conversion of m-xylene in contact with chlorides of other metals. The present paper gives the results of investigation of the conversions of m-xylene in the presence of aluminum halides as well as

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Conversions of Metaxylene in the Presence of Metallic-Salt
Halides in the Liquid Phase.

62-2-8/28

chlorides of Sn, Ti, Sb, Zn and their equimolecular mixtures with aluminum chloride. It was shown that in contact with $AlCl_3$ and $AlBr_3$ m-xylene endures the isomerization with the simultaneous formation of 18-20 percentage by weight of p-xylene. It was further found that an admixture of $CbCl_3$ and $SiCl_4$ (to aluminum chloride) leads to the suppression of the attacking action of the latter as well as to the almost complete removal of the side reactions of the demethylation and methylation. There are 3 tables and 12 references, 3 of which are Slavic.

ASSOCIATION: Institute for Organic Chemistry imeni N.D. Zelinskiy An USSR
(Institut organicheskoy khimii imeni N.D. Zelinskogo Akademii nauk SSSR).

SUBMITTED: October 10, 1956

AVAILABLE: Library of Congress

1. m-Xylene-Isomerism
2. Aluminum chloride catalyst
3. Metaxylene
4. Metallic-Salt halides

Card 2/2

62-2-21/28

AUTHORS: Shuykin, N. I., Bel'skiy, I. F.,
TITLE: The Catalytic Reduction of Alkylfurylcarbinols to Alkylfuranes.
(Kataliticheskoye vosstanovleniye alkilfurilkarbinolov v alkilfurany)
PERIODICAL: Izvestiya AN SSSR Otdeleniye Khimicheskikh Nauk, 1958, Nr 2,
pp. 240-240 (USSR)
ABSTRACT: During the investigation of the hydrogenation of ethyl- and ethylfuryl-carbinols the authors discovered the interesting fact of the selective reduction of the above-mentioned compounds to α -ethyl- and α -propyl-furanes. It was further found that the capability of the hydroxyl-group to substitute in hydrogen under the catalytic influence of palladium coal depends on the presence of the alkylfurylcarbinol cycle. In the reduction of isopropyl- and butylfurylcarbinols α -isobutyl- and α -isopentylfuranes with a yield up to 70% are produced. The experiment was performed in the vapor phase at 250-260°. There are 2 Slavic references.

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The Catalytic Reduction of Alkylfurylcarbinols to Alkylfuranes 62-2-21/28

ASSOCIATION: Institute for Organic Chemistry imeni N.D. Zelinskiy AN SSSR
(Institut organicheskoy khimii im. N.D. Zelinskogo Akademii
nauk SSSR)

SUBMITTED: September 27, 1957

AVAILABLE: Library of Congress

1. Alkylfurylcarbinals to alkylfuranes-Catalysis
2. Alkylfuryl-carbinals-Reduction
3. Alkylfuranes-Production
4. Palladium coal catalyst-Applications

Card 2/2

SHUYKIN, Nikolay I. and NARYSHKINA, Tatyana, I.

"Über die Katalytische Synthese vo Cyclopentadienkohlenwasserstoffen".

Erdöl und Kohle, No. 3, 1958.

AUTHOR: Shuykin, N. I., Corresponding Member, AS USSR 30-58-3-14/45
 TITLE: Annual Meeting of the Society of German Chemical Scientists
 (Godichnoye sobraniye obshchestva nemetskikh khimikov)
 PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 3, pp. 72-74
 (USSR)

ABSTRACT: The meeting took place from October 2nd to October 9th, 1957 in West Berlin. It was attended by more than 1500 scientists and specialists from the German Federal Republic and the German Democratic Republic, as well as from Austria, England, Hungary, Holland, Denmark, Italy, Poland, the USSR, the USA, France, Czechoslovakia and Japan. The meetings were attended by a large number of advanced students of the 3 Berlin universities and technical universities of both parts of Berlin. Work was concentrated mainly in the two principal sections: Inorganic and organic chemistry. Problems of analytical chemistry, the chemistry of high-polymers and rubber, the food - and forensic chemistry, the chemistry of dyes, as well as the protection of copy-rights was dealt with by special groups. 58 reports were delivered in the section for organic chemistry: on new

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Annual Meeting of the Society of German Chemical Scientists

30-58-3-14/45

experimental works in the field of the synthesis, catalysis, and the study of transformation processes in the reactions of isomerization, oxidation, and regeneration. Great interest was found to be displayed by German scientists for the chemistry of heterogeneous cycles. Some of these reports were marked by their originality and attracted general interest. Increased interest was also displayed in works dealing with the synthesis and transformation of various derivatives of quinones. The author submitted two reports: "Selective Regeneration of alkyl furyl carbinole in the presence of palladium" (in cooperation with I. F. Bel'skiy) and "On the Catalytic Synthesis of the Hydrocarbons of the Cyclopentadiene series (tsiklopentadiyenovogo ryada), (in cooperation with T. I. Naryshkina). An excursion was made to the Schering works, where the organization of scientific and operational research of the organic synthesis of a number of antibiotics was studied. The author was also offered the possibility of visiting a number of chemical laboratories of the University and of the Technical University and to make

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30-58-3-14/45

himself acquainted with their work. Scientific contact was taken up with several German chemical scientists.

AVAILABLE: Library of Congress

Card 3/3

62-58-3-8/30

AUTHORS: Minachev, Kh. M. , Shuykin, N. I. , Feofanova, L. M.

TITLE: Reactions of n.Heptane on Oxide-Metallic Catalysts Under Hydrogen Pressure in a Flow-System (Prevrashcheniya n.geptana na okisno-metallicheskich katalizatorakh pod davleniyem vodoroda v protochnoy sisteme)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 3, pp. 305 - 308 (USSR)

ABSTRACT: The experimental data on the investigations of the reactions of the 6- and 5-membered cyclanes and n.alkanes in contact with oxide-metallic catalysts were already given in a number of previous papers. These investigations also yielded determinations of interesting rules governing the catalytic properties of the metals of the 8th group. In the present paper the authors discuss the results obtained in the investigation of the reactions of n.heptane on Pt, Pd and Rh as well as the experimental data. Of special **interest** is the statement that simultaneous with the formation of aromatic

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62-58-3-8/30

Reactions of n-Heptane on Oxide-Metallic Catalysts Under Hydrogen Pressure in a Flow-System

and isoparaaffinic hydrocarbons a dehydrocyclization of n-heptane with ring closure (5-membered cycle) was observed. The properties of the products of catalysis of n-heptane, obtained in contact with Pt, Rh as well as alumina catalysts are given in a table. There are 1 table, and 10 references, 9 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR
(Institute for Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: October 18, 1956

Card 2/2

62-58-3-9/30

AUTHORS: Shuykin, N. I. , Bel'skiy, I. F.

TITLE: The Catalytic Hydrogenolysis of Furan Compounds (Kataliticheskiy gidrogenoliz furanovykh soyedineniy)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 3, pp. 309 - 315 (USSR)

ABSTRACT: With the example of the preceding experiments the authors this time performed the hydrogenation of the mixtures of some α -alkyl- and α -alkenyl-furans at 235°C. It was assumed that at this temperature an absolute splitting of the furan cycle must take place. Then products of the hydrogenolysis should form. This assumption was confirmed by the experiments. Moreover a new result of theoretical as well as practical importance was attained: It became evident that the C-C-bond 3-4 readily splits up at 235°C, but that at a lower temperature (175°C) a hydrogenolysis of this bond does not occur. In this experiment the hydrogenation of the mixture of α -n.butyl- and α -butenyl-furanes (235°C) was performed in a flow-system under ordinary pressure. In the presence of the

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62-58-3-9/30

The Catalytic Hydrogenolysis of Furan Compounds

skeleton nickel catalysts a complete splitting of the furan-cycle in these compounds takes place. It was further found that the furan-cycle in these compounds is subjected to hydrogenolysis in the direction of the split of the C-O bond 1-5, as well as in the direction of the split of the bond 1-5 and 4-5 as well as 1-5 and 3-4. It was found that the relative stability of the different bonds in the cycle of α -n.butyl- and α -n.amyl-furans depends on the length of the side chain. The authors obtained some data according to which the mechanism of the radicals of the hydrogenolysis reaction of the furan-cycle can be assumed. There are 3 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: October 27, 1956

Card 2/2

62-58-3-10/30

AUTHORS: Shuykin, N. I. , Naryshkina, T. I.

TITLE: The Contact-Catalytic Dehydrocyclization of Pentadiene-1,3
(Kontaktno-kataliticheskaya degidrotsiklizatsiya penta-
diyena-1,3)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk,
1958, Nr 3, pp. 316 - 323 (USSR)

ABSTRACT: Too little interest has hitherto been shown in the contact-
-catalytic conversions. The occurrence of a geometric iso-
merism as well as mobile hydrogen atoms in piperilene makes
an investigation of the above-mentioned contact-conversions
especially interesting. They had already been investigated
by Zal'manovich and Tsiper. An indication to the possibility
of a reaction of the dehydrocyclization of piperilene is
contained in the papers by Kennedy and Hetzel. The authors
of this paper investigated the thermal conversions of piperi-
lene. In connection with this (and as a confirmation of the
assumption) it became evident that this reaction is a cata-
lytic one, and that the yields of cyclopentadiene depend on

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62-58-3-10/30

The Contact-Catalytic Dehydrocyclization of Pentadiene-1,3

the nature of the catalyst. In the present paper the authors describe the investigated reaction of the dehydrocyclization of piperilene in the presence of diverse catalysts. The yields of cyclopentadiene are very high: 18,6 - 18,4 %. The reaction takes place in contact with an aluminum-potassium dichromate-catalyst and 5 % Pt-black. The obtained results confirm the assumption of the catalytic nature of the dehydrocyclization reaction of piperilene. The authors also studied the influence of temperature, pressure and so on. They found the optimum conditions of the formation of cyclopentadiene. They worked out a scheme for the analysis of the complicated mixture of the catalytic dehydrocyclization products of piperilene. There are 2 figures, 5 tables, and 12 references, 7 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institut for Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: November 3, 1956

Card 2/2

AUTHORS: Shuykin, N. I., Cherkashin, M. I.

62-58-3-25/30

TITLE: On the Catalytic Transformation of Dialkylsubstituents of Cyclohexane Under Hydrogen Pressure (O kataliticheskikh prevrashcheniyakh dialkilzameshchennykh tsiklogeksana pod davleniyem vodoroda)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 3, pp. 373-374 (USSR)

ABSTRACT: In 5 previous works the authors already reported on the investigation of the transformation of the hydrocarbons of the hexamethylene series under hydrogen pressure. In the present work they describe their investigation of the conversions of 1-methyl-4-n-propylcyclohexane. The basic directions of the course of reaction are shown as well as the influence of the carriers on the character of the transformation. The following statements were arrived at: 1-methyl-4-n-propylcyclohexane at 450° C and at 20 atm. excess pressure of hydrogen (in the presence of 0,5% Pt-Al₂O₃) converts to p-methyl-n-propylbenzene, toluene, p-, o- and m-acids. This is also the case in the mixture of methylethylbenzenes. On these conditions pure Al₂O₃

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On the Catalytic Transformation of Dialkylsubstituents of Cyclohexane Under Hydrogen Pressure 62-58-3-25/30

can also cause reactions of dehydrogenation and dealkylation. Platinized dioxide of zirconium can initiate only a reaction of the dehydrogenation of the hexamethylene cycle. For the first time 1-methyl-4-n-propylcyclohexane in cis- and transform were obtained. There are 3 tables and 6 references, 2 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: October 28, 1957

Card 2/2

Shaykin, N. I.

62-59-4-7/32

AUTHORS:

Minaev, Kh. M., Shaykin, N. I., Ryabentseva, E. A.,
Kononov, N. F., Kurdyumova, I. M.

TITLE:

Investigation of the Properties of Metal-oxide Catalysts
for Gasoline Reforming (Issledovaniye svoystv oksido-
metallicheskikh katalizatorov reforminga benzina). Commu-
nication 3: Conversions of the Gasoline Fraction at the
Boiling Point 80,5-126° of the Second Baku Petroleum on
Palladium Catalyst (Sobshcheniye 3. Prevrashcheniya
fraktsii s t.kip. 80,5 - 126° benzina neftey vtorogo Baku na
palladiyevoy katalizatore)

PERIODICAL:

Izvestiya Akademi Nauk SSSR, Otdeleniye Khimicheskikh Nauk,
1952, Nr 4, pp. 422 - 436 (USSR)

ABSTRACT:

The previous papers (References 1,2) contained the data
found in the investigation of the gasoline fractions of
some petroleum types. The influence of the chemical properties
of the carrier on the activity of the catalyst was already
described in earlier works. This paper gives the experimental
material of the authors. In the presence of 2 different samples

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62-52-4-7/32

Investigation of the Properties of Palladium Catalysts for Gasoline Reforming. Communication 3: Conversions of the Gasoline Fraction at the Boiling Point 35,5 - 125° of the Saso 1 Baku Petroleum on Palladium Catalyst

of a palladium catalyst 0,5% Pd - Al_2O_3 which are different by their working methods the reforming of the fraction (boiling point 35,5 - 125°) was carried out at 470 - 490° C at 20 atmospheres excess pressure. The experiment showed that both samples of the catalyst carry out the dehydrogenation of 6-membered cyclanes as well as the conversion of 5-membered cyclanes into 6-membered ones (with their subsequent dehydrogenation). In the presence of the second experimental catalyst numerous 5-membered cyclanes and paraffines joined the process of formation of aromatic hydrocarbons. This process is still more intensive in the presence of catalyst n.2 than in that of n.1. Moreover the catalysate n.2 distinguishes itself by the richer content of ramified paraffines.

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62-58-4-7/32

Investigation of the Properties of Metal-oxide Catalysts for Gasoline Reforming. Communication 3: Conversions of the Gasoline Fraction at the Boiling Point 89,5 - 126° of the Second Baku Petroleum on Palladium Catalyst

Furthermore the composition of the initial fraction and of two catalysts were determined by means of a combined method. There are 1 figure, 7 tables, and 20 references, 13 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: November 3, 1956

AVAILABLE: Library of Congress

1. Petroleum-Gasoline fractions--Analysis 2. Metal oxide catalysts--Properties

Card 3/3

Shuykin N. I.

AUTHORS: Shuykin, N. I., Bel'skiy, I. F. 62-58-4-22/32

TITLE: Hydration of Alkyl α -Furylcarbinols on Ni-ZnO-Catalysts
(Gidrirovaniye alkil α -furilkarbinolov na Ni-ZnO-katalizatore)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 4, pp. 506-507 (USSR)

ABSTRACT: The hydration of alkylfurylcarbinols can take place in various directions according to the nature of the catalyst and the conditions of reaction. Lately the authors found (Reference 3) that the primary reaction in the hydration of alkylfurylcarbinols is not an hydration of binary bindings within the cycle but a reduction of the hydroxyl α -group which leads to the formation of α -alkylfurans. In the present paper the authors report on the investigated hydration of alkylfurylcarbinols in gas phase on a Ni-ZnO-catalyst. In this they found that this catalyst (like paladinized charcoal) effects as primary reaction the reduction of the hydroxyl group in alkylfurylcarbinols without touching the divisible bindings

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Hydration of Alkyl α -Furylcarbinols on Ni-ZnO-
-Catalysts

62-53-4-22/32

in the furan cycle.

There are 1 table and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut organicheskoy khimii im. M. D. Zelinskogo
Akademii nauk SSSR (Institute for Organic Chemistry
imeni M. D. Zelinskiy, AS USSR)

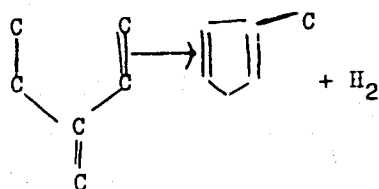
SUBMITTED: November 10, 1957

AVAILABL: Library of Congress

1. Alkylfurylcarbinols—Hydration 2. Ni-ZnO—Catalysts
—Applications

Card 2/2

AUTHORS: Shuykin, M. I., Naryshkina, T. I. 62-58-4-23/32
 TITLE: Catalytic Dehydrocyclization of 2-Ethylbutadiene (Kataliti-
 cheskaya degidrotsiklizatsiya 2-etilbutadiyena).
 PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk,
 1958, Vol. - Nr 4, pp. 508-510 (USSR)
 ABSTRACT: Recently the authors showed that a reaction of catalytic de-
 hydrocyclization of alkanes can also take place with the for-
 mation of five-membered cyclanes. In the present paper it was
 shown that 2-ethylbutadiene also has the capability to cyclize
 in methylcyclopentadiene-1,3 (in a yield of up to 38% :



From the comparison of the results of the investigations describ-
 ed in this paper with the data obtained in the dehydrocyclizat-
 ion of alkadienes it is seen that: hydrocarbons (composition

Card 1/2

Catalytic Dehydrocyclization of 2-ethylbutadiene.

62-58-4-23/32

C₆) with a ramified carbon chain are especially inclined to dehydrocyclization. There are 2 tables, and 10 references, 9 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy, AS USSR)

SUBMITTED: November 19, 1957

AVAILABLE: Library of Congress

1. Ethylbutadiene--Catalytic dehydrocyclization

Card 2/2

SHUKIN, N. I.

AUTHORS: Petrov, A. D., Shukin, N. I.,

62-58-4-31/32

TITLE:

Conference of Chemical Scientists
in the German Federal Republic in 1957 (Kaimicheskaya
konferentsiya v federativnoy respublike Germanii v 1957 g.)

PERIODICAL:

Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk,
1958, Nr 4, pp. 524 - 526 (USSR)

ABSTRACT:

The annual meeting of the German Society for the Investi-
gation of Petroleum and Coal took place in West-Berlin from
October 10-12, 1957. Professor K. Tsigler acted as chairman.
During the plenary meetings 4 lectures were held, 27 reports
and lectures covered the sections for the chemistry of petro-
leum, chemistry of coal and geology. This report only deals
with the first 2 sections. F. Tsobel' (Chemical Kombinat
Knyul's-Marl') reported on the present stage of industrial
petroleum-chemical syntheses: the different kinds of methane
chlorination. Professor A. Bentts (President of the Admini-
stration for Petroleum Drilling in Hannover) dealt in his
lecture especially with the prospects and possibilities of
new discoveries of petroleum wells in North-, Central- and

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62-52-4-31/32

Conference of Chemical Scientists in the German
Federal Republic (Cont.)

West-Africa, in Canada, the Near East, South America and Europe, as France, Germany, Austria etc. Also in India numerous basins were found. The traditional conception that the reserves of petroleum concentrated mainly in the Near East will have to be changed within the near future as voluminous new reserves were found in the Sahara. The lecture by Doctor G. Goffmann (Daimler-Benz-Joint Stock Company, Stuttgart) dealt with the theme "Fuel and Engine". He reported on the results of numerous investigations of the relation between fuel and the Diesel engine. New results in the field of the investigation of various inflammable matters and fuels with regard to their inflammability (with high content of aromatic hydrocarbons) were given. New results in the USA with regard to the form of the combustion chamber in engines, as, for instance in the model V-6 were reported.- Interesting reports were delivered by the referents in the sections: A. Goppe (Frankfurt) "Device for

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62-58-4-31/32

Conference of Chemical Scientists in the German
Federal Republic (Cont.)

Separating Paraffin in Heyde". H. Freynd (Budapest):
"Chemical Changes of Hydrocarbons in the High-Voltage
Field as an Analogy to Radiochemical Conversions".
G. Kelbel (Berlin): "Synthesis of Hydrocarbons of Carbon
Oxide and Water Through Cobalt-and Ruthenium Contacts".
I. Freving (London): "The Problem of Lubrication in Atomic
Power Stations". O. Zhoklin (Lugano): "On the Production
of Dicarboxylic Acid of Other Substances Than Naphtalene".
L. Visner (Hannover): "The Importance of Nuclear Radiations
in the Processing of Petroleum and Coal". L. Rappen (Duis-
burg-Meyderikh): "A New Way to the Quantitative Definition
of the Main Constituents of Technical Phenol Mixtures".

Delegates of the USSR to this conference were: The Corresponding Members AS USSR, N. I. Shuykin, A. D. Petrov.

AVAILABLE:
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Library of Congress

1. Chemistry--Conference--USSR

18

5(3)
 AUTHORS: Shuykin, N.I., Viktorova, Ye.A., SOV/55-58-5-21/34
 Karakhanov, R.A.
 TITLE: Synthesis of Tetrahydrofurylcyclopentylmethane (Sintez tetra-
 gidrofuriltsiklopentilmetana)
 PERIODICAL: Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki,
 astronomii, fiziki, khimii, 1958, Nr 5, pp 133 - 134 (USSR)
 ABSTRACT: According to a method of the author deviating from the method
 of M.M. Katsnel'son and M.S. Kondakova [Ref 1] at first furyl-
 cyclopentylcarbinol was obtained. After dehydration over
 aluminum oxide under 350° - 375° furfuralcyclopentane was ob-
 tained. After hydration under 125° - 130° in presence of a
 nickel catalyzer and subsequent rectification the authors
 attained tetrahydrofurylcyclopentylmethane.
 There is 1 Soviet reference.
 ASSOCIATION: Kafedra khimii nefiti (Chair of Petroleum Chemistry)
 SUBMITTED: October 2, 1957

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23

5(3)

AUTHORS:

Shuykin, N.I., Erivanskaya, L.A.,
Korosteleva, G.S., Gogoberidze, G.V.

SOV/55-58-5-27/34

TITLE:

Catalytic Conversion of the Isoamyl Ester of n-Cresol and of the Cyclopentyl Ester of Phenol (Kataliticheskiye prevrashcheniya izoamilovogo efira n-krezola i tsiklopentilovogo efira fenola)

PERIODICAL:

Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 5, pp 181 - 186 (USSR)

ABSTRACT:

The transformations of the combinations mentioned in the title were investigated in presence of aluminum oxide under ordinary pressure, 150 - 250° and for different volume velocities. It is supposed that for 150° in presence of Zn Cl₂ (10 %) which was covered on Al₂O₃, a direct alkylation of the phenols by olefins (without the intermediate formation of phenolethers takes place. - There are 4 tables, and 8 references, 5 of which are Soviet, 2 American, and 1 German.

ASSOCIATION:

Kafedra khimii nefiti (Chair of Petroleum Chemistry)

SUBMITTED:

December 16, 1957

Card 1/1

AUTHORS: Timofeyeva, Ye. A., Shuykin, N. I.

62-58-5-7/27

TITLE: Contact-Catalytic Dehydrogenation of n-Pentane at Various Temperatures (Kontaktno-kataliticheskaya degidrogenizatsiya n. pentana pri razlichnykh temperaturakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 570 - 574 (USSR)

ABSTRACT: As already previously reported by the authors (References 1,2) the dehydration of n-pentane and isopentane can be well carried out with an aluminum-chromium catalyst activated by potassium-oxide (Al_2O_3 ; Cr_2O_3 ; $K_2O = 90,7:5,6:3,7$ mol%). Investigations have shown that the activity of the catalyst can be increased when after burning out of the so-called coal-film from the surface of the catalyst by means of oxygen, the same is treated by hydrogen. Already Maslyanskiy and Bursman (Reference 3) found that a reduced aluminum-chromium-catalyst is more active than an oxidized one, especially for the dehydration of cyclohexane. Similar indications are given by Vol'tts and Veller (Reference 4). The authors of the present report investigated the influence of the temperature on the course of

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Contact-Catalytic Dehydrogenation of N-Pentane at
Various Temperatures

62-58-5-7/27

reaction of the dehydration of n-pentane in the presence of an aluminum-chromium-potassium-catalyst. It was shown that the dehydrogenation of n-pentane attains the equilibrium under the assumed conditions at 500 to 550°C. Further it was found that not an increased activity of the catalyst is required for a better yield of pentanes but a better selectivity of the same. There are 3 figures, 4 tables and 6 references, 4 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute for Organic Chemistry imeni N. D. Zelinskiy AS USSR)

SUBMITTED: December 6, 1956

1. Pentanes--Dehydrogenation
2. Pentanes--Temperature factors
3. Catalysts--Properties
4. Potassium oxide--Applications

Card 2/2

62-58-5-15/27

AUTHORS: Shuykin, N. I., Cherkashin, M. I., Gayvoronskaya, G. K.

TITLE: Catalytic Isomerization of the Dicyclopentyl Under Hydrogen Pressure (Kataliticheskaya izomerizatsiya ditsiklopentila pod davleniyem vodoroda)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 626 - 628 (USSR)

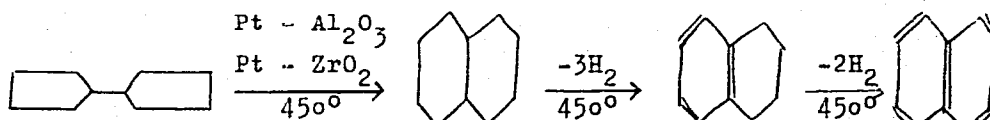
ABSTRACT: The investigation of catalytic conversions of bicyclic systems lead to the determination of important rules. Zelinskiy and Tits (Reference 1) observed already the extension of the ring-system of dicyclopentyl in decalin under the action of hydriotic acid on cyclopentylcyclopentanol. One of the authors of this report found (Reference 2) that 1,2-cyclopentylcyclopentanol under the action of zinc-chloride, synthesizes Δ -9,10-octalin. Turova-Polyak (Reference 3) obtained the same results with concentrated phosphoric acid. He also achieved the synthesis of trans-decalin on the action of $AlCl_3$ on dicyclopentyl. Eventova (Reference 4) found that dicyclopentyl can be hydro-

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Catalytic Isomerization of the Dicyclopentyl Under
Hydrogen Pressure

62-58-5-15/27

genized at 310 to 320°C in the presence of platinized coal.
A composed mixture of hydrocarbons is formed in this connection.
In the present work the authors investigated the behavior of
dicyclopentyl on platine-catalysts at increased temperatures
and under hydrogen pressure. It was found in this connection
that dicyclopentyl suffers an isomerization in decalin with
subsequent dehydration in tetralin and naphthalene:



There are 3 tables and 6 references, 6 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute for Organic Chemistry imeni N. D. Ze-
linskiy AS USSR)

SUBMITTED: December 6, 1957

Card 2/2

1. Cyclic compounds--Isomerism 2. Cyclic compounds--Catalysis
3. Catalysts--Materials 4. Catalysts--Performance 5. Hydrogen--Appli-
cations 6. Pressure--Applications

PETROV, A.D.; SHUYKIN, N.I.

~~Chemical conference~~ held in the German Federal Republic in 1957.
Izv. AN SSSR Otd. khim. nauk no.5:652-653 My '58. (MIRA 11:6)
(Oils and fats)

SOV/62-58-6-10/37

AUTHORS:

Popov, M. A., Shuykin, N. I.

TITLE:

The Catalytic Synthesis of Nitrils (Kataliticheskiy sintez nitrilov) Communication 1. The Cyanizing of Butanol-1 by Means of Ammonia in the Presence of Nickel-Alumina-Catalyzers (Soobshcheniye 1. Tsianirovaniye butanola-1 ammiakom v prisutstvii nikel'-glinozemnykh katalizatorov)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 6, pp. 713 - 718 (USSR)

ABSTRACT:

According to the authors' opinion olefines and alcohols belong to the most easily accessible substances which it is possible to convert into nitrils under the influence of ammonia. Because of the great practical importance of nitrils the authors endeavored to find an efficacious catalyst in order to bring about the synthesis of alcohol or olefine and ammonia. Butanol-1 and hexene-1 served as the initial substances for the investigation. Investigations were carried out of the reaction of the cyanizing of butanol-1 by ammonia in the presence of various samples of the nickel-alumina catalyst at temperatures of 240 - 400° and under atmospheric pressure. For the cyanizing of butanol-1 a catalyst

Card 1/2

The Catalytic Synthesis of Nitryls. Communication 1. The SOV/62-58-6-10/37
Cyanizing of Butanol-1 by Means of Ammonia in the Presence of Nickel-Alumina-
Catalyzers

was found to be the most effective which consists of 3% reduced nickel on active aluminum oxide. In the presence of this catalyzer (at 300°) an 81,5% yield of nitryl (of n.butyrate) could be obtained. Under similar conditions and in the presence of a cobalt-nickel catalyst of hexene-1, only 3,8 to 6,7% of the corresponding nitryl is formed. There are 2 tables and 11 references, 3 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk
SSSR(Institute of Organic Chemistry imeni N.D.Zelinskiy, AS USSR)

SUBMITTED: December 4, 1956

- | | | |
|------------------------|---|-------------------|
| 1. Nitryls--Synthesis | 2. Butanol--Chemical reactions | 3. Ammonia |
| --Chemical reactions | 4. Hexene--Chemical reactions | 5. Alumina-nickel |
| catalysts--Performance | 6. Cobalt-nickel catalysts--Performance | |

Card 2/2

AUTHORS:

Minachev, Kh. M., ~~Shuykin, N. I.~~ SOV/62-58-6-11/37
Ryashentseva, M. A., Kononov, N. F.

TITLE:

Investigation of the Properties of Metal-Oxide Catalysts
of Gasoline Re-Forming (Issledovaniye svoystv okisno-
metallicheskikh katalizatorov reforminga benzinov)
Communication 4. Re-Forming the Fraction With Boiling Point
89,5-126° of the Benzene of the Mineral Oils of the Volga-
Ural Group on a Palladium Catalyst treated with hydrogen
sulfide (Soobshcheniye 4. Reformirovaniye fraktsii s t. kip.
89,5-126° benzina neftey volzhsko-ural'skoy gruppy na
palladiyevom katalizatore, obrabotannom serovodorodom)

PERIODICAL:

Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,
1958, Nr 6, pp. 719-725 (USSR)

ABSTRACT:

The problem to be solved by this paper was the investigation
of the activity and stability of a sulfurous palladium
catalyst under the conditions of the re-formation of the
fraction (boiling point 89,5 - 126°) of benzene obtained
from the mineral oils of the Volga-Ural group. Under given
conditions the catalyst carries out the dehydrogenation of

Card 1/3

Investigation of the Properties of Metal-Oxide . SOV/62-58-6-11/37
Catalysts of Gasoline Re-Forming. Communication 4.
Re-Forming the Fraction With Boiling Point 89,5 - 126° of the Benzine of
the Mineral Oils of the Volga-Ural Group on a Palladium Catalyst
treated with hydrogen sulfide

6-membered cyclanes and, besides, also the dehydroisomerization
of 5-membered cyclanes. the skeleton isomerization of alkanes,
and the de-sulfurization of benzine. A catalyst consisting of
0,5% Pd on Al_2O_3 , which had previously been treated with
hydrogen sulfide, showed more resistivity against the effect
of organic sulfurous compounds than palladium catalysts that
had not yet been subjected to the action of hydrogen sulfide.
The individual composition of the initial fraction was
investigated. There are 1 figure, 6 tables, and 8 references,
5 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D.
Zelinskiy, AS USSR)

SUBMITTED: December 13, 1956
Card 2/3

Investigation of the Properties of Metal-Oxide
Catalysts of Gasoline Re-Forming. Communication
4. Re-Forming the Fraction With Boiling Point 89,5-
126° of the Benzine of the Mineral Oils of the
Volga-Ural Group on a Palladium Catalyst treated
with hydrogen sulfide

SOV/62-58-6-11/37

- | | |
|---------------------------------------|-------------------------------------|
| 1. Metal oxides--Catalytic properties | 2. Palladium catalysts--Performance |
| 3. Hydrogen sulfide--Chemical effects | 4. Benzenes--Synthesis |
| --Fractionation | 5. Mineral oils |

Card 3/3

AUTHORS: Shuykin, N. I., Timofeyeva, Ye. A.
Dobrynina, T. P.

SOV/62-58-6-12/37

TITLE: The Contact-Catalytic Dehydration of Isopentane in Dependence
on Temperature (Kontaktno-kataliticheskaya degidrogenizatsiya
izopentana v zavisimosti ot temperatury)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,
1958, Nr 6, pp. 726 - 729 (USSR)

ABSTRACT: In an earlier work (Ref 1) the influence exercised by temperature
upon the dehydration of n.isopentane in the presence of an
aluminum-chromium catalyst was investigated. It was found that
at 500-550° the reaction of the dehydration of n.pentane attains
the state of equilibrium. In the present work the same investi-
gation is carried out with isopentane. It was found that in the
interval of 500-550° the dehydration of isopentane attains a
state of equilibrium. At 500-550° the amount of isopentene obtained
from isopentane exceeds that of n.pentene obtained from n.pentane
by 7-8 mol %. Less "coke" and gas was formed under existing
conditions (by the dehydration of isopentane) than by the
dehydration of n.pentane. There are 2 figures, 4 tables, and 5

Card 1/2

The Contact-Catalytic Dehydration of Isopentane in
Isopentane in Dependence on Temperature

SOV/62-58-6-12/37

references, 4 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im. N.D.Zelinskogo Akademii nauk
SSSR (Institute of Organic Chemistry imeni N.D.Zelinskiy, AS USSR)

SUBMITTED: December 6, 1956

1. Isopentane--Dehydration
 2. Isopentane--Catalysis
 3. Isopentane--Temperature factors
 4. Aluminum-chromium catalysts
- Performance

Card 2/2

AUTHORS: Minachev, Kh. M., Shuykin, N. I.,
Vinogradov, V. L. SOV/62-58-7-12/26

TITLE: A Comparative Investigation of the Catalytic Properties of
Platinum on the Conditions of Benzine Aromatization at
Atmospheric and Increased Hydrogen Pressure (Sravnitel'noye
izucheniye kataliticheskikh svoystv platiny v usloviyakh
aromatizatsii benzina pri atmosfernom i povyshennom davleniyakh
vodoroda)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk,
1958, Nr 7: pp 866 - 869 (USSR)

ABSTRACT: During the last years the authors of the present paper have
dealt with the investigation of the catalytic properties of
the Pt-, Pd-, Rh-, Ni- and Co catalysts (Refs 1-10). In the
present paper the authors report on the investigation of the
activity and stability of the 4% platinized charcoal on the
conditions of the aromatization of the benzine fraction at
atmospheric pressure and different temperatures. Furthermore
the activity and the stability of 0.8% platinized charcoal was
investigated on the same conditions as prevailing in the case
of the 4% one. The results of the investigations are: The

Card 1/2

A Comparative Investigation of the Catalytic
Properties of Platinum on the Conditions of Benzene Aromatization at
Atmospheric and Increased Hydrogen Pressure

SOV/62-58-7-12/26

greatest activity and stability was found with the 0.8% catalyst Pt - C, which operated at 460° and at 20 atmospheres absolute pressure. It is of interest to learn that the two catalysts do not carry out any other reactions but the reaction of the dehydration of the 6-membered cycles. There are 1 figure, 1 table, and 15 references, 15 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii im.N.D.Zelinskogo(Institute of Organic Chemistry imeni N.D.Zelinskiy)

SUBMITTED: January 3, 1957

Card 2/2

SOV/62-11-11/11
 Chernov, V. G.,
 Petrov, V. G., Galkov, Yu. M., Petrov, G. G.

The paper reports on the synthesis of different structures
 in the presence of a chlorine-chromium-potassium catalyst
 (katalizator) and a chlorine-chromium-potassium catalyst
 (katalizator).

RESEARCH: Institute Akademi nauk SSSR, Otdeleniye khimicheskikh nauk,
 Moskva, M. S., 117 31-1000 (USSR)

ABSTRACT: It is taken for granted that in the presence of oxide catalysts
 on certain conditions aromatic hydrocarbons are formed from
 alkanes having 6 and more carbon atoms in the main chain.
 However, they are not suited for a direct cyclization
 (Chernov, V. G.). In the investigation of the aromatization of
 alkanes and isoparaffins greatest attention was directed to
 the formation of aromatic hydrocarbons and less attention
 was paid to the structure of aromatic hydrocarbons.
 In the present paper the authors deal with the reaction of
 the formation of different structures (C₆, C₇, C₈) in the
 presence of a chlorine-chromium-potassium catalyst.

10000-82-7-1116
Information of the discovery of different structures in the presence
of a titanium catalyst

on the conditions assumed) high yields of the corresponding
monomeric hydrocarbons (30 to 40% in one passage) could
be obtained from isobutene and propylene. There are 1
table, 1 figure, and 5 references, 5 of which are Soviet.

10000-82-7-1116: Russian: *Prilozhenie k zhurnalu im. N. D. Zelinskogo Akademii
nauk USSR*
Institute of Organic Chemistry named N. D. Zelinskiy, AS USSR)

10000-82-7-1116: February 17, 1958